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CHIROPTERA OF THE GREAT SMOKY MOUNTAINS: BIBLIOGRAPHY WITH INDEXES BY SPECIES AND MAJOR SUBJECT AREAS

RESEARCH/RESOURCES MANAGEMENT REPORT SER-56



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NATIONAL PARK SERVICE
SOUTHEAST REGION

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CHIROPTERA OF THE GREAT SMOKY MOUNTAINS:
BIBLIOGRAPHY WITH INDEXES BY SPECIES
AND MAJOR SUBJECT AREAS

Research/Resources Management Report SER-56

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ABSTRACT

Of the 40 species of bats known to occur within the United States, 15 occur within Tennessee and/or North Carolina and 10 species occur within the Great Smoky Mountains National Park. This bibliography was an attempt to document much of the literature concerning bat research and species occurrence in the park and surrounding southeastern states. The bibliography cites approximately 235 books, theses, journal articles, and pieces of correspondence; these cover 117 years, from 1864 to 1981, and are primarily ecological in nature. The majority of the literature was obtained from major scientific journals and from the files and library facilities of the author, the University of Tennessee, and the Tennessee Valley Authority. In addition to the bibliography, two indexes were constructed to allow the reader a quick and efficient means of locating references for particular bat species and/or major subject areas.

ACKNOWLEDGEMENTS

I would like to thank the Great Smoky Mountains Natural History Association for its support of the work reported here. The present report is one of a series of bibliographies being developed for the biota, soils, geology, and environment of Great Smoky Mountains National Park. The need for such a series was first expressed by a committee made up of representatives from the Interpretation and Resources Management Divisions of Great Smoky Mountains National Park and the Uplands Field Research Laboratory. Peter White of Uplands Laboratory supervised the project.

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INTRODUCTION

Approximately 40 species of bats are known to occur in the United States (Barbour and Davis 1969, Mohr 1976). Of these, 15 (38 percent) occur in Tennessee and/or North Carolina and 10 (25 percent) occur in Great Smoky Mountains National Park (GRSM) (Table 1). Despite this fact, very little research has been conducted on bats in the southeastern United States. Although the primary objective of this bibliography was to document the literature concerning bat research in GRSM and the surrounding southeastern states, it became necessary to broaden the scope of the project. Many species of bats, like birds, can undergo seasonal migrations. Banded individuals of species such as the Little Brown bat (Myotis lucifugus) and the Indiana bat (M. sodalis) have been recaptured 290 to 300 miles away from their original capture points (Barbour and Davis 1969). Therefore, when dealing with the ecology of such animals, it became necessary to consider the literature of each species from a broad geographic range. Finally, some books (Table 2) were included in the bibliography because they were considered to be important to the overall topic of bat ecology.

Due to the plethora of literature concerning most temperate bat species, it would be incorrect to assume that this bibliography is complete for any of those species. In order to maintain some constraints on the size of the bibliography, most of the literature that has been included is ecological in nature. Literature concerning laboratory-oriented research in areas such as cytology and genetics, for example, was sharply curtailed although not completely eliminated. Furthermore, a sufficient number of general and review papers have been incorporated so that one may obtain additional references by using these general references.

Table 1. Bat species that occur within the Great Smoky Mountains National Park and the states of Tennessee and North Carolina.

SPECIES	GRSM	TENN	N. CAROLINA
<u>Eptesicus fuscus</u> - Big Brown Bat	x	x	x
<u>Lasionycteris noctivagans</u> - Silver-Haired Bat	x	x	x
<u>Lasiurus borealis</u> - Red Bat	x	x	x
<u>Lasiurus cinereus</u> - Hoary Bat ¹	x	x	x
<u>Lasiurus seminolus</u> - Seminole Bat			x
<u>Myotis austroriparius</u> - Southeastern Bat		x	x
<u>Myotis grisescens</u> - Gray Bat ²		x	
<u>Myotis keenii</u> - Keens Bat	x	x	x
<u>Myotis leibii</u> - Least Bat ³	x	x	x
<u>Myotis lucifugus</u> - Little Brown Bat	x	x	x
<u>Myotis sodalis</u> - Indiana Bat ⁴	x	x	x
<u>Nycticeius humeralis</u> - Evening Bat		x	x
<u>Pipistrellus subflavus</u> - Tri-Colored Bat	x	x	x
<u>Plecotus rafinesquii</u> - Southern Big-Eared Bat	x	x	x
<u>Tsarida brasiliensis</u> - Mexican Free-Tailed Bat ⁵			x

¹Never officially collected in GRSM but most likely occurs there.

²Federally endangered species

³Deemed in need of management by the State of Tennessee and of special concern by the Tennessee Heritage Program

⁴Federally endangered species

⁵Recent documented range expansion into N. Carolina (Lee and Marsh, 1978)

Table 2. Major books of reference concerning bats.

BATS by G. M. Allen. Dover Publications, New York. 1967. 368 pp.

BIOLOGY OF BATS by W. A. Wimsatt, Academic Press, London. 1970.

THE LIVES OF BATS by D. W. Yalden and P. A. Morris. Quadrangle/The New York Times Book Co. 1975. 247 pp.

ABOUT BATS: A CHIROPTERAN SYMPOSIUM edited by B. H. Slaughter and D. W. Walton. Southern Methodist University Press, Dallas. 1970. 339 pp.

LISTENING IN THE DARK by D. R. Griffin. Dover Publications, New York. 1974. 413 pp.

THE WORLD OF THE BAT by C. E. Mohr. J. B. Lippincott Co., New York. 1976. 162 pp.

BATS OF AMERICA by R. W. Barbour and W. H. Davis. University Press Kentucky. 1969. 286 pp.

THE WORLD OF BATS by A. Novick and N. Leen. Holt, Rinehart, New York. 1970.

Our basic approach in constructing the bibliography and the two indexes was historical in nature. Many of the early, classic papers, which are still relevant today, are included, along with the most recent and more sophisticated research. Thus, the bibliography cites approximately 235 books, theses, journal articles, and pieces of correspondence; these cover 117 years, from 1864 to 1981.

METHODS

Much of the literature in this bibliography came from the files of the author. In addition, the library facilities of the University of Tennessee, Knoxville, and the Tennessee Valley Authority were also used. Records of bat species found within GRSM were obtained from the mammal collection at the University of Tennessee Zoology Department, from Linzey and Linzey (1971), and from the author's personal files.

The major journals that were reviewed for bat literature included Wildlife Review, Journal of Wildlife Management, Journal of Mammalogy, Ecology, and Bat Research News. Other journals that occasionally contained relevant articles included Journal of Wildlife Diseases, American Naturalist, American Journal of Anatomy, Journal of Experimental Biology, Journal of Behavioral and Ecological Sociobiology, and Journal of Morphology.

The bibliography was arranged alphabetically by author. This was the easiest and quickest method and is standard practice for most major journals. In addition to the bibliography, two indexes were constructed to give the reader a quick and efficient means of locating references for particular bat species and/or major subject areas. The references within each index are also arranged alphabetically by author for each bat species and subject area. Thus, the most efficient use of this bibliography would be to go directly to the

indexes for the particular bat species and subject area that is being investigated. The references which are found in both places would be the most worthwhile to initially locate in the bibliography.

TAXONOMIC CHANGES

There are several taxonomic changes that may be confusing within the bibliography. The Southern Big-eared bat (Plecotus rafinesquii) was previously known as Corynorhinus rafinesquii, the Least bat (Myotis leibii) was once Myotis subulatus, and the Mexican Free-tailed bat (Tadarida brasiliensis) was once Tadarida mexicana.

BIBLIOGRAPHY OF BATS IN THE REGION OF GREAT SMOKY MOUNTAINS NATIONAL PARK

- Allan, P. F. 1947. Blue jay attacks red bats. J. Mammal. 28:180.
- Allen, G. M. 1940. Bats. Harvard University Press. 368 pp.
- Allen, H. 1864. Monograph of bats of North America. Smithsonian Misc. Coll. 165.
- Allen, H. 1893. A monograph of the bats of North America. Bull. U.S. Natl. Mus. 43.
- Baker, W. W., S. G. Marshall, and V. B. Baker. 1968. Autumn fat deposition in the evening bat (Nycticeius humeralis). J. Mammal. 49:314-317.
- Baker, W. W. 1967. Myotis leibii leibii in Georgia. J. Mammal. 48:142.
- Barbour, R. W., and W. H. Davis. 1969. Bats of America. University Press Kentucky, Lexington. 286 pp.
- Barbour, R. W., and W. H. Davis. 1974. Mammals of Kentucky. University Press Kentucky, Lexington. 322 pp.
- Barbour, R. W., W. H. Davis, and M. D. Hassell. 1966. The need of vision in homing by Myotis sodalis. J. Mammal. 47:356-357.
- Barclay, R. M. R., and D. W. Thomas. 1979. Copulation call of Myotis lucifugus: a discrete situation-specific communication signal. J. Mammal. 60:632-634.
- Barclay, R. M. R., D. W. Thomas, and M. B. Fenton. 1980. Comparison of methods used for controlling bats in buildings. J. Wildl. Manage. 44:502-506.
- Barclay, R. M. R., M. B. Fenton, and D. W. Thomas. 1979. Social behavior of the little brown bat, Myotis lucifugus. II. Vocal communication. Behav. Ecol. Sociobiol. 6:137-146.
- Barkalow, F. S., Jr., and D. A. Adams. 1955. The seminole bat, Lasiurus seminolus, in North Carolina. J. Mammal. 36:453-454.
- Barkalow, F. S., Jr., and J. B. Funderberg, Jr. 1960. Probable breeding and additional records of the seminole bat in North Carolina. J. Mammal. 41:394-395.
- Barr, T. C., Jr. 1961. Caves of Tennessee. Tennessee Dept. of Conservation and Commerce, Div. of Geology, Bull. No. 64. 567 pp.
- Barr, T. C., Jr., and R. M. Norton. 1965. Predation on cave bats by the pilot black snake. J. Mammal. 46:672.
- Beer, J. R. 1953. The screech owl as a predator on the big brown bat. J. Mammal. 34:384.
- Beer, J. R. 1954. A record of a hoary bat from a cave. J. Mammal. 35:116.
- Beer, J. R. 1955. Survival and movements of banded big brown bats. J. Mammal. 36:242-248.

- Beer, J. R. 1956. A record of a silver-haired bat in a cave. J. Mammal. 37:282.
- Beer, J. R., and A. G. Richards. 1956. Hibernation of the big brown bat. J. Mammal. 37:31-41.
- Belwood, J. J. 1979. Feeding ecology of an Indiana bat community with emphasis on the endangered Indiana bat, Myotis sodalis. Master's Thesis, Univ. Florida, Gainesville.
- Belwood, J. J., and M. B. Fenton. 1976. Variation in the diet of Myotis lucifugus (Chiroptera: Vespertilionidae). Can. J. Zool. 15:1674-1678.
- Bishop, S. C. 1947. Curious behavior of a hoary bat. J. Mammal. 28:293-294.
- Bole, B. P., Jr. 1943. Myotis austroriparius (Rhoades) in Tennessee. J. Mammal. 24:403.
- Brimley, C. S. 1905. A descriptive catalog of the mammals of North Carolina, exclusive of the Cetacea. J. Elisha Mitchell Sci. Soc. 21:1-32.
- Buchler, E. R. 1975. Food transit in Myotis lucifugus. J. Mammal. 56:252-255.
- Buchler, E. R. 1976. Prey selection by Myotis lucifugus (Chiroptera: Vespertilionidae). Am. Nat. 110:619-628.
- Buchler, E. R. 1980. The development of flight, foraging, and echolocation in the little brown bat (Myotis lucifugus). Behav. Ecol. Sociobiol. 6:211-218.
- Cagle, F. R., and L. Cockrum. 1943. Notes on a summer colony of Myotis lucifugus lucifugus. J. Mammal. 24:474-492.
- Cahalane, V. H. 1948. The status of mammals in the U.S. National Park system. J. Mammal. 29:247-259.
- Caire, W., R. K. LaVal, M. L. LaVal, and R. Clawson. 1979. Notes on the ecology of Myotis keenii (Chiroptera: Vespertilionidae) in eastern Missouri. Am. Midl. Nat. 102:404-407.
- Carter, T. D. 1950. On the migration of the red bat, Lasiurus borealis borealis. J. Mammal. 31:349-350.
- Christian, J. J. 1956. The natural history of a summer-aggregation of the big brown bat, Eptesicus fuscus. Am. Midl. Nat. 55:66-95.
- Clark, D. R. 1978. Uptake of dietary PCB by pregnant big brown bats (Eptesicus fuscus) and their fetuses. Bull. Environ. Contam. Toxicol. 19:707-714.

- Clark, D. R. 1981. Death in bats from DDE, DDT or Dieldrin: Diagnosis via residues in carcass fat. *Bull. Environ. Contam. Toxicol.* 26:367-374.
- Clark, D. R., T. H. Kunz, and T. E. Kaiser. 1978. Insecticides applied to a nursery colony of little brown bats (Myotis lucifugus): Lethal concentrations in brain tissues. *J. Mammal.* 59:84-91.
- Clark, D. R., R. K. LaVal, and D. M. Swineford. 1978. Dieldrin-induced mortality in an endangered species, the gray bat (Myotis grisescens). *Science* 199:1357-1359.
- Clark, D. R., Jr., R. K. LaVal, and A. J. Krynitsky. 1980. Dieldrin and heptachlor residues in dead gray bats, Franklin County, Missouri; 1976 versus 1977. *Pesticides Monitoring J.* 13:137-140.
- Clawson, R. L., R. K. LaVal, M. L. LaVal, and W. Caire. 1980. Clustering behavior of hibernating Myotis sodalis in Missouri. *J. Mammal.* 61:245-253.
- Cockrum, E. L. 1970. Insecticides and guano bats. *Ecology* 51:761-762.
- Coleman, R. H. 1950. The status of Lasiurus borealis seminolus. *J. Mammal.* 31:190-192.
- Constantine, D. G. 1958. Ecological observations on lasiurine bats in Georgia. *J. Mammal.* 39:64-70.
- Constantine, D. G. 1967. Rabies transmission by air in bat caves. *U.S. Public Health Service Publ.* 1617.
- Constantine, D. G. 1979a. An updated list of rabies-infected bats in North America. *J. Wildl. Dis.* 15:347-349.
- Constantine, D. G. 1979b. Bat rabies and bat management. *Bull. Soc. Vector Ecol.* 4:1-9.
- Cope, J. B., and S. R. Humphrey. 1967. Homing experiments with the evening bat Nycticeius humeralis. *J. Mammal.* 48:136.
- Cope, J. B., and S. R. Humphrey. 1972. Reproduction of the bats Myotis keenii and Pipistrellus subflavus in Indiana. *Bat Res. News* 13:9-10.
- Cope, J. B., and S. R. Humphrey. 1977. Spring and autumn swarming behavior in the Indiana bat, Myotis sodalis. *J. Mammal.* 58:93-95.
- Cope, J. B., K. Koontz, and E. Churchaell. 1961. Notes on homing of two species of bats, Myotis lucifugus and Eptesicus fuscus. *Proc. Indiana Acad. Sci.* 70:270-274.
- Dalquest, W. W. 1947. Notes on the natural history of the bat Corynorhinus rafinesquii in California. *J. Mammal.* 28:17-30.

- Davis, R. 1966. Homing performance and homing ability in bats. *Ecol. Monogr.* 36:201-237.
- Davis, R., and E. L. Cockrum. 1963. Bridges utilized as day-roosts by bats. *J. Mammal.* 44:428-430.
- Davis, W. H. 1955. Myotis subulatus leibii in unusual situations. *J. Mammal.* 35:63-80.
- Davis, W. H. 1957. The status of the seminole bat (Lasiurus seminolus Rhoads). *Proc. Biol. Soc. Washington* 70:181.
- Davis, W. H. 1959a. Taxonomy of the eastern pipistrelle. *J. Mammal.* 40:521-531.
- Davis, W. H. 1959b. Disproportionate sex ratios in hibernating bats. *J. Mammal.* 40:16-19.
- Davis, W. H. 1964a. Winter awakening patterns in the bats Myotis lucifugus and Pipistrellus subflavus. *J. Mammal.* 45:645-647.
- Davis, W. H. 1964b. Fall swarming of bats at Dixon Cave, Kentucky. *Bull. Nat. Speleol.* 26:82.
- Davis, W. H. 1966. Population dynamics of the bat, Pipistrellus subflavus. *J. Mammal.* 47:383-396.
- Davis, W. H., and R. W. Barbour. 1965. The use of vision in flight by the bat, Myotis sodalis. *Am. Midl. Nat.* 74:497-499.
- Davis, W. H., and J. W. Hardin. 1967. Homing in Lasionycteris noctivagans. *J. Mammal.* 48:323.
- Davis, W. H., and W. Z. Lidicker, Jr. 1956. Winter range of the red bat, Lasiurus borealis. *J. Mammal.* 37:280-281.
- Davis, W. H., and R. E. Mumford. 1962. Ecological notes on the bat Pipistrellus subflavus. *Am. Midl. Nat.* 68:294-298.
- Davis, W. H., and O. Reite. 1967. Responses of bats from temperate regions to changes in ambient temperature. *Biol. Bull.* 132:320-328.
- Davis, W. H., R. W. Barbour, and M. D. Hassell. 1968. Colonial behavior of Eptesicus fuscus. *J. Mammal.* 49:44-50.
- Davis, W. H., M. D. Hassell, and C. L. Rippey. 1965. Maternity colonies of the bat Myotis l. lucifugus in Kentucky. *Am. Midl. Nat.* 73:161-165.
- DeBlase, A. F., and J. B. Cope. 1967. An Indiana bat impaled on barbed wire. *Am. Midl. Nat.* 77:238.
- DeBlase, A. F., S. R. Humphrey, and K. S. Drury. 1965. Cave flooding and mortality in bats in Wind Cave, Kentucky. *J. Mammal.* 46:96.

- Downes, W. L., Jr. 1964. Unusual roosting behavior in red bats. J. Mammal. 45:143-144.
- Downing, S. C. 1961. Sharp-shinned hawk preys on red bat. J. Mammal. 42:540.
- Dymond, J. R. 1936. Life history notes and growth studies on the little brown bat, Myotis lucifugus lucifugus. Can. Field Nat. 50:114-116.
- Easterla, D. A. 1967. Black rat snake preys upon gray Myotis and winter observations of red bats. Am. Midl. Nat. 77:527-528.
- Easterla, D. A., and L. C. Watkins. 1969. Pregnant Myotis sodalis in northwestern Missouri. J. Mammal. 50:372-373.
- Easterla, D. A., and L. C. Watkins. 1970. Breeding of Lasionycteris noctivagans and Nycticeius humeralis in southeastern Iowa. Am. Midl. Nat. 84:254-255.
- Elder, W. H., and W. J. Gunier. 1978. Sex ratios and seasonal movements of gray bats (Myotis grisescens) in southwestern Missouri and adjacent states. Am. Midl. Nat. 99:463-472.
- Engel, J. M. 1976. The Indiana bat, Myotis sodalis, a bibliography. U.S. Fish and Wildl. Serv., Spec. Sci. Rep. 196. 11 pp.
- Fenton, M. B. 1977. Variation in the social calls of little brown bats. Can. J. Zool. 55:1151-1157.
- Fenton, M. B., and J. H. Fullard. 1981. Moth hearing and the feeding strategies of bats. Am. Scientist 69:268-275.
- Fenton, M. B., J. J. Belwood, J. H. Follard, and T. H. Kunz. 1976. Responses of Myotis lucifugus (Chiroptera: Vespertilionidae) to calls of conspecifics and to other sounds. Can. J. Zool. 54:1443-1448.
- Findley, J. S. 1954. Tree roosting of the eastern pipistrelle. J. Mammal. 35:433.
- Findley, J. S. 1976. The structure of bat communities. Am. Nat. 110:129-139.
- Findley, J. S., and C. Jones. 1964. Seasonal distribution of the hoary bat. J. Mammal. 45:461-470.
- Folk, G. E., Jr. 1940. Shift of population among hibernating bats. J. Mammal. 21:306-315.
- Gates, W. H. 1941. A few notes on the evening bat, Nycticeius humeralis. J. Mammal. 22:53-56.
- Geluso, K. N., J. S. Altenbach, and D. E. Wilson. 1976. Bat mortality: pesticide poisoning and migratory stress. Science 194:184-186.

- Glass, B. P. 1966. Some notes on reproduction in the red bat, Lasiurus borealis. Proc. Oklahoma Acad. Sci. 46:40-41.
- Goehring, H. H. 1954. Pipistrellus subflavus obscurus, Myotis keenii, and Eptesicus fuscus fuscus hibernating in a storm sewer in central Minnesota. J. Mammal. 35:434-435.
- Goodpaster, W., and D. F. Hoffmeister. 1950. Bats as prey for mink in a Kentucky cave. J. Mammal. 31:457.
- Goodpaster, W., and D. F. Hoffmeister. 1952. Notes on the mammals of western Tennessee. J. Mammal. 33:362-371.
- Gould, E. 1971. Studies of maternal-infant communication and development of vocalizations in the bats Myotis and Eptesicus. Commun. Behav. Biol. 5:263-313.
- Gould, E. 1975. Neonatal vocalizations in bats of eight genera. J. Mammal. 56:15-29.
- Graves, F. F., Jr. 1969. A survey of the Chiroptera of West Tennessee. Thesis, Memphis State Univ., Memphis. 71 pp.
- Graves, F. F., and M. J. Harvey. 1974. Distribution of Chiroptera in western Tennessee. J. Tenn. Acad. Sci. 49:106-109.
- Greenhall, A. M. 1973. Indiana bat: A cave-dweller in trouble. Natl. Parks and Conserv. Mag. 47:14-17.
- Greenhall, A. M., and J. L. Paradiso. 1968. Bats and bat banding. Bureau of Sport Fisheries and Wildlife Resource Publ. 72. U.S. Government Printing Office. 47 pp.
- Griffin, D. R. 1958. Listening in the dark. Yale University Press, New Haven, Conn. 413 pp.
- Griffin, D. R., and H. B. Hitchcock. 1965. Probable 24-year longevity records for Myotis lucifugus. J. Mammal. 46:332.
- Guilday, J. E., H. W. Hamilton, E. Anderson, and P. W. Parmalee. 1978. The Baker Bluff Cave deposit, Tennessee and the late Pleistocene faunal gradient. Bull. Carnegie Mus. Nat. Hist. 11. 67 pp.
- Gunnier, W. J., and W. H. Elder. 1971. Experimental homing of gray bats to a maternity colony in a Missouri barn. Am. Midl. Nat. 86:502-506.
- Gunnier, W. J., and W. H. Elder. 1972. New records of Myotis leibii from Missouri. Am. Midland Nat. 89:489-490.
- Guthrie, M. J. 1933. Notes on the seasonal movements and habits of some cave bats. J. Mammal. 14:1-19.
- Hall, J. S. 1962. A life history and taxonomic study of the Indiana bat, Myotis sodalis. Reading Public Mus. Art Gallery Sci. Publ. 12:1-68.

- Hall, J. S. 1963. Notes on Plecotus rafinesquii in Central Kentucky. J. Mammal. 44:119-120.
- Hall, J. S. 1964. Bat hibernation in the Mammoth Cave region of Kentucky. Bull. Nat. Speleol. Soc. 26:71-72.
- Hall, J. S. 1972. The status of Myotis sodalis. The West Virginia Dep. Nat. Resour., Elkins. 5 pp.
- Hall, J. S., and C. H. Blewett. 1964. Bat remains in owl pellets from Missouri. J. Mammal. 45:303-304.
- Hall, J. S., and W. H. Davis. 1958. A record of homing in the big brown bat. J. Mammal. 39:292.
- Hall, J. S., and N. Wilson. 1966. Seasonal populations and movements of the gray bat in the Kentucky area. Am. Midl. Nat. 75:317-324.
- Hamilton, R. B., and D. T. Stalling. 1972. Lasiurus borealis with five young. J. Mammal. 53:190.
- Hamilton, W. J., Jr. 1933. The insect food of the big brown bat. J. Mammal. 14:155-156.
- Hamilton, W. J., Jr. 1943. The mammals of eastern United States. Comstock Publ. Associates, Ithaca, N. Y. 432 pp.
- Handley, C. O., Jr. 1959. A revision of the American bats of the genera, Euderma and Plecotus. Proc. U.S. Natl. Mus. 110:94-246.
- Hardin, J. W. 1967. Waking periods and movement of Myotis sodalis during the hibernation season. M.S. Thesis, Univ. Kentucky, Lexington.
- Hardin, J. W., and M. D. Hassell. 1970. Observation and waking periods and movements of Myotis sodalis during hibernation. J. Mammal. 51:829-831.
- Harvey, M. J. 1975. Endangered Chiroptera of the southeastern United States. Proc. 29th Annu. Conf. S.E. Assoc. Game and Fish Comm. 29:429-433.
- Harvey, M. J. 1976. Homing of gray bats, Myotis grisescens, to a hibernaculum. Am. Midl. Nat. 96:497-498.
- Hassell, M. D. 1967. Intra-cave activity of four species of bats hibernating in Kentucky. Ph.D. Thesis, Univ. Kentucky, Lexington.
- Henshaw, R. E., and G. E. Folk, Jr. 1966. Relation of thermoregulation to seasonally changing microclimate in two species of bats (Myotis lucifugus and Myotis sodalis). Physiol. Zool. 39:223-236.
- Herreid, C. F., Jr. 1967. Mortality statistics of young bats. Ecology 48:310-312.

- Herreid, C. F., Jr., and R. B. Davis. 1966. Flight patterns of bats. *J. Mammal.* 47:78-86.
- Herreid, C. F., Jr., and K. Schmidt-Nielsen. 1966. Oxygen consumption, temperature, and water loss in bats from different environments. *Am. J. Physiol.* 211:1108-1112.
- Hock, R. J. 1951. The metabolic rates and body temperatures of bats. *Biol. Bull.* 101:289-299.
- Hoff, G. L., and W. J. Bigler. 1981. The role of bats in the propagation and spread of histoplasmosis: A review. *J. Wildl. Dis.* 17:191-197.
- Hoffmeister, D. F., and W. W. Goodpaster. 1962. Observations on a colony of big-eared bats, Plecotus rafinesquei. *Trans. Illinois Acad. Sci.* 55:87-89.
- Howell, A. H. 1909. Description of a new bat from Nickajack Cave, Tennessee. *Proc. Biol. Soc. Washington* 22:45-48.
- Humphrey, S. R. 1966. Flight behavior of Myotis lucifugus at nursery colonies. *J. Mammal.* 47:323.
- Humphrey, S. R. 1975. Letter to superintendent G. W. Calhoun concerning Jan. 4 entry into Blowhole Cave in Great Smoky Mountains National Park. Vertical files, Great Smoky Mountains National Park Library.
- Humphrey, S. R. 1978. Status, winter habitat, and management of the endangered Indiana bat, Myotis sodalis. *Fla. Sci.* 41:65-76.
- Humphrey, S. R., and J. B. Cope. 1976. Population ecology of the little brown bat, Myotis lucifugus, in Indiana and north-central Kentucky. *Am. Soc. Mammal. Spec. Publ.* 4:1-81.
- Humphrey, S. R., and J. B. Cope. 1977. Survival rates of the endangered Indiana bat, Myotis sodalis. *J. Mammal.* 58:32-36.
- Humphrey, S. R., R. K. LaVal, and R. L. Clawson. 1977. Nursery populations of Pipistrellus subflavus (Chiroptera:Vespertilionidae) in Missouri. *Trans. Illinois Acad. Sci.*, 69:367.
- Humphrey, S. R., A. R. Richter, and J. B. Cope. 1977. Summer habitat and ecology of the endangered Indiana bat, Myotis sodalis. *J. Mammal.* 58:334-346.
- Hurst, R. N., and J. E. Wiebers. 1967. Minimum body temperature extremes in the little brown bat Myotis lucifugus. *J. Mammal.* 48:465.
- Hurst, R. N., and J. E. Wiebers. 1968. Thermoenergetic patterns in the little brown bat, Myotis lucifugus (LeConte). *J. Mammal.* 49:791-794.
- Iwen, F. A. 1958. Hoary bat the victim of a barbed wire fence. *J. Mammal.* 39:438.

- Izor, R. J. 1979. Winter range of the silver-haired bat. J. Mammal. 60:641-643.
- Jegla, T. C. 1963. A recent deposit of Myotis lucifugus in Mammoth Cave. J. Mammal. 44:121-122.
- Jegla, T. C., and J. S. Hall. 1962. A pleistocene deposit of the free-tailed bat in Mammoth Cave, Kentucky. J. Mammal. 43:477-481.
- Jennings, W. L. 1958. The ecological distribution of bats in Florida. Ph.D. Thesis, Univ. Florida, Gainesville. 126 pp.
- Johnson, C. E. 1932. Notes on a family of red bats in captivity. J. Mammal. 13:132-135.
- Jones, C. 1967. Growth, development, and wind loading in the evening bat, Nycticeius humeralis. J. Mammal. 48:1-19.
- Kaplan, M. M., and H. Koprowski. 1980. Rabies. Sci. Am. 242:120-134.
- Keen, R., and H. Hitchcock. 1980. Survival and longevity of the little brown bat (Myotis lucifugus) in southeastern Ontario. J. Mammal. 61:1-8.
- Kellogg, R. 1939. Annotated list of Tennessee mammals. Proc. U.S. Nat. Mus. 86:245-303.
- Kennedy, M. L., and T. L. Best. 1972. Flight speed of the Gray bat, Myotis grisescens. Am. Midl. Nat. 88:254-255.
- Komarek, E. V., and R. Komarek. 1938. Mammals of the Great Smoky Mountains. Bull. Chicago Acad. Sci. 5:137-162.
- Krulin, G. S., and J. A. Sealander. 1972. Annual lipid cycle of the gray bat, Myotis grisescens. Comp. Biochem. Physiol. 42:537-549.
- Krutzsch, P. H. 1950. Carnivorous behavior in the big brown bat. J. Mammal. 31:96.
- Krutzsch, P. H. 1955. Observations on the Mexican free-tailed bat, Tadarida mexicana. J. Mammal. 36:236-242.
- Krutzsch, P. H. 1961. A summer colony of male little brown bats. J. Mammal. 42:529-530.
- Krutzsch, P. H. 1966. Remarks on silver-haired and Leib's bats in eastern United States. J. Mammal. 47:121.
- Kunz, T. H. 1974. Reproduction, growth, and mortality of the vespertilionid bat, Eptesicus fuscus, in Kansas. J. Mammal. 55:1-13.
- Kunz, T. H., E. L. P. Anthony, and W. T. Ramage III. 1977. Mortality of little brown bats following multiple pesticide applications. J. Wildl. Manage. 41:476-483.

- Laidlow, G. W. J., and M. B. Fenton. 1971. Control of nursery colony populations of bats by artificial light. *J. Wildl. Manage.* 35:843-846.
- Lane, H. K. 1946. Notes on Pipistrellus subflavus subflavus during the season of parturition. *Proc. Pennsylvania Acad. Sci.* 20:57-61.
- LaVal, R. K. 1967. Records of bats from the southeastern United States. *J. Mammal.* 48:645-648.
- LaVal, R. K. 1970. Intraspecific relationships of bats of the species Myotis austroriparius. *J. Mammal.* 51:542-552.
- LaVal, R. K., and M. L. LaVal. 1979. Notes on reproduction, behavior, and abundance of the red bat, Lasiurus borealis. *J. Mammal.* 60:209-212.
- LaVal, R. K., and M. L. LaVal. 1980. Ecological studies and management of Missouri bats, with emphasis on cave-dwelling species. *Terrestrial Series 8*, Missouri Dept. of Conserv., Jefferson City. 53 pp.
- LaVal, R. K., R. L. Clawson, M. L. LaVal, and W. Caire. 1977. Foraging behavior and nocturnal activity patterns of Missouri bats, with emphasis on the endangered species Myotis grisescens and Myotis sodalis. *J. Mammal.* 58:592-599.
- Lawhon, W. T., Jr. 1969. Ecology of Alexander Cave, Perry County, Tennessee. Unpubl. Thesis, Memphis State Univ., Tennessee. 33 pp.
- Lee, D., and C. Marsh. 1978. Range expansion of the Brazilian Free-tailed bat into North Carolina. *Am. Midl. Nat.* 100:240-241.
- Leffler, J. W., L. T. Leffler, and J. S. Hall. 1979. Effects of familiar area on the homing ability of the little brown bat, Myotis lucifugus. *J. Mammal.* 60:201-205.
- Linzey, A., and D. Linzey. 1971. *Mammals of the Great Smoky Mountains National Park*. University of Tennessee Press, Knoxville. 114 pp.
- Linzey, D., and A. Linzey. 1968. *Mammals of the Great Smoky Mountains National Park*. *J. Elisha Mitchell Sci. Soc.* 84:348-414.
- Mackiewicz, J., and R. H. Backus. 1956. Oceanic records of Lasionycteris noctivagans and Lasiurus borealis. *J. Mammal.* 37:442-443.
- Martin, K. H., and M. B. Fenton. 1978. A possible defensive function for calls given by bats (Myotis lucifugus) arousing from torpor. *Can. J. Zool.* 56:1430-1432.
- Martin, K. H., and R. A. Stehn. 1977. Blood and spleen response to isolation and cold stress in little brown bats, Myotis lucifugus. *Acta Zool. (Stockh.)* 58:53-59.
- McManus, J. J. 1974. Activity and thermal preference of the little brown bat, Myotis lucifugus, during hibernation. *J. Mammal.* 55:844-846.

- Menaker, M. 1964. Frequency of spontaneous arousal from hibernation in bats. *Nature* 203:540-541.
- Miller, G. S., Jr. 1897. Revision of the North American bats of the family Vespertilionidae. U.S.D.A. Bur. Biol. Survey, North American Fauna 13. 129 pp.
- Miller, R. E. 1939. The reproductive cycle in male bats of the species Myotis lucifugus lucifugus and Myotis grisescens. *J. Morph.* 64:267-295.
- Mohr, C. E. 1932. Myotis grisescens and M. sodalis in Tennessee and Alabama. *J. Mammal.* 13:272-273.
- Mohr, C. E. 1933. Observations on the young of cave-dwelling bats. *J. Mammal.* 14:49-53.
- Mohr, C. E. 1953. Possible causes of an apparent decline in wintering populations of cave bats. *NSS News* 11:4-5.
- Mohr, C. E. 1972. The status of threatened species of cave-dwelling bats. *Bull. Natl. Speleol. Soc.* 34:33-47.
- Mumford, R. E., and J. O. Whitaker. 1975. Seasonal activity of bats at an Indiana cave. *Proc. Indiana Acad. Sci.* 84:500-507.
- Myers, R. F. 1964. Ecology of three species of myotine bats in the Ozark Plateau. Unpubl. Ph.D. Dissertation, Univ. Missouri, Columbia. 210 pp.
- Nero, R. W. 1958. Hoary bat parturition data. *Blue Jay* 16:130-131.
- Neuhauser, H. N. 1971. Myotis leibii leibii in the Great Smoky Mountains National Park. *J. Tenn. Acad. Sci.* 46:79.
- Novick, A., and N. Leen. 1970. The world of bats. Holt, Rinehart, New York.
- Odum, E. P. 1949. Small mammals of the Highlands (North Carolina) Plateau. *J. Mammal.* 30:179-192.
- O'Farrell, M. J., and B. W. Miller. 1972. Pipistrelle bats attracted to vocalizing females and to a blacklight insect trap. *Southwest Nat.* 88:462-463.
- Pearson, O. P., M. R. Koford, and A. K. Pearson. 1952. Reproduction of the lump-nosed bat (Corynorhinus rafinesquei) in California. *J. Mammal.* 33:273-320.
- Phillips, G. L. 1966. Ecology of the big brown bat (Chiroptera: Vespertilionidae) in northeastern Kansas. *Am. Midl. Nat.* 75:168-198.
- Phillips, K., and H. A. Hays. 1978. Report on the gray bats (Myotis grisescens) in the storm sewers of Pittsburg, Kansas. *Trans. Kansas Acad. Sci.* 81:90-91.

- Ploskey, G. R., and J. A. Sealander. 1979. Lipid deposition and withdrawal before and after hibernation in Pipistrellus subflavus (Chiroptera: Vespertilionidae) Southwestern Nat. 24:71-78.
- Proctor, J. W., and E. H. Studier. 1970. Effects of ambient temperature and water vapor pressure on evaporative water loss in Myotis lucifugus. J. Mammal. 51:799-804.
- Quay, W. B., and J. S. Miller. 1955. Occurrence of the red bat, Lasiurus borealis, in caves. J. Mammal. 36:454-455.
- Rabinowitz, A. 1979a. An endangered species in the Great Smoky Mountains National Park: The Indiana bat. Abstr. presented at Resour. Manage. Conf., Great Smoky Mountains National Park, Gatlinburg, Tenn.
- Rabinowitz, A. 1979b. Status of the endangered bat, Myotis sodalis, in the Great Smoky Mountains National Park. Abstr. presented at 5th Annu. Sci. Res. Meeting of Upland Areas of the Southeast Region, National Park Service, Gatlinburg, Tenn.
- Rabinowitz, A. 1979c. In need of protection. Tenn. Conserv. 6:13-15 .
- Rabinowitz, A. 1981. Thermal hibernating preference of the eastern pipistrelle bat, Pipistrellus subflavus. J. Tenn. Acad. Sci. 56:113-114.
- Rabinowitz, A., and B. Nottingham. 1979. Human visitation and fall/winter cave usage by bats in the Great Smoky Mountains National Park. Speleotype 13:4-20.
- Rabinowitz, A., and M. Tuttle. 1980. Status of summer colonies of the endangered gray bat in Kentucky. J. Wildl. Manage. 44:955-980 .
- Rabinowitz, A. R. 1978. Habitat use and prey selection by the endangered gray bat, Myotis grisescens, in East Tennessee. Master's Thesis, Univ. Tenn., Knoxville. 56 pp.
- Racey, P. A. 1970. The breeding, care, and management of vespertilionid bats in the laboratory. Laboratory Animals 4:171-83.
- Rauch, J. C., and J. S. Hayward. 1970. Regional distribution of blood flow in the bat (Myotis lucifugus) during arousal from hibernation. Can. J. Physiol. and Pharmacology 48:269-273.
- Reeder, E. M. 1939. Cytology of the reproductive tract of the female bat, Myotis lucifugus lucifugus. J. Morph. 64:431-453.
- Reith, C. C. 1980. Shifts in times of activity by Lasionycteris noctivagans. J. Mammal. 61:104-108.
- Rice, D. W. 1957. Life history and ecology of Myotis austroriparius in Florida. J. Mammal. 38:15-32.

- Richter, A. R., D. A. Seerley, J. B. Cope, and J. H. Keith. 1978. A newly discovered concentration of hibernating Indiana bat, Myotis sodalis, in southern Indiana. J. Mammal. 59:191.
- Rippy, C. L. 1965. The baculum in Myotis sodalis and Myotis austroriparius. Trans. Kentucky Acad. Sci. 26:19-21.
- Ross, A. 1967. Ecological aspects of the food habits of insectivorous bats. Proc. Western Foundation of Vert. Zool. 1:205-63.
- Ross, A. J. 1961. Notes on the food habits of bats. J. Mammal. 42:66-71.
- Roth, C. E. 1957. Notes on maternal care in Myotis lucifugus. J. Mammal. 38:122-123.
- Saugey, E. A. 1978. Reproductive biology of the gray bat, Myotis grisescens, in north-central Arkansas. Unpubl. M.S. Thesis, Arkansas State Univ., State College. 93 pp.
- Schwartz, A. 1954. A second record of Myotis subulatus leibii in North Carolina. J. Elisha Mitchell Sci. Soc. 70:88-96.
- Schwartz, A. 1955. The status of the species of the brasiliensis group of the genus Tadarida. J. Mammal. 36:106-109.
- Sherman, H. B. 1930. Birth of the young of Myotis austroriparius. J. Mammal. 11:495-503.
- Sherman, H. B. 1935. Food habits of the seminole bat. J. Mammal. 16:223-224.
- Sherman, H. B. 1937. Breeding habits of the free-tailed bat. J. Mammal. 18:176-187.
- Silver, J. 1928. Pilot black-snake feeding on the big brown bat. J. Mammal. 9:149.
- Slaughter, B. H., and D. W. Walton. 1970. About bats. Southern Methodist University Press, Dallas.
- Smith, E. R., J. B. Funderberg, Jr., and T. L. Quay. 1960. A checklist of North Carolina mammals. North Carolina Wildl. Res. Comm., Raleigh. 19 pp.
- Sperry, C. C. 1933. Opossum and skunk eat bats. J. Mammal. 14:152-153.
- Stones, R. C., and J. E. Wiebers. 1965a. Activity and body weight of Myotis lucifugus at a low temperature. J. Mammal. 46:94-95.
- Stones, R. C., and J. E. Wiebers. 1965b. A review of temperature regulation in bats. Am. Midl. Nat. 74:155-167.

- Thomas, D. W., M. B. Fenton, and R. M. R. Barclay. 1979. Social behavior of the little brown bat, Myotis lucifugus. I. Mating behavior. Behav. Ecol. Sociobiol. 6:129-136.
- Thomas, S. P., and R. A. Suthers. 1972. The physiology and energetics of bat flight. J. Exp. Biol. 573:17-35.
- Tinkle, D. W., and W. W. Milstead. 1960. Sex ratios and population density in hibernating Myotis. Am. Midl. Nat. 63:327-334.
- Tuttle, M. 1964. Myotis subulatus in Tennessee. J. Mammal. 45:148-149.
- Tuttle, M. 1975. Population ecology of the Gray bat (Myotis grisescens): Factors influencing early growth and development. Occ. Pap. Mus. Nat. Hist. 36, Univ. Kansas. Pp. 1-24.
- Tuttle, M. 1976a. Population ecology of the Gray bat (Myotis grisescens): Philopatry, timing, and patterns of movement, weight loss during migration, and seasonal adaptive strategies. Occ. Pap. Mus. Nat. Hist. 54, Univ. Kansas. Pp. 1-38.
- Tuttle, M. 1976b. Population ecology of the gray bat (Myotis grisescens): Factors influencing growth and survival of newly volant young. Ecology 57:587-595.
- Tuttle, M. 1977. Gating as a means of protecting cave dwelling bats. Pages 77-82 in T. Aley and D. Rhodes, eds. Natl. Cave Manage. Symp. Proc., 1976. Speleobooks, Albuquerque, N. M.
- Tuttle, M. 1979. Status, causes of decline, and management of endangered gray bats. J. Wildl. Manage. 43:1-17.
- Tuttle, M., and D. E. Stevenson. 1977. An analysis of migration as a mortality factor in the gray bat based on public recoveries of banded bats. Am. Midl. Nat. 97:235-240.
- Tuttle, M. D. 1961. Notes on the bats of eastern Tennessee. Bat Banding News 2:13-14.
- Tuttle, M. D. 1972. Letter to Don DeFoe concerning March 23 entry into Blowhole Cave in Great Smoky Mountains National Park. Vertical files, Great Smoky Mountains National Park Library.
- Tuttle, M. D. 1979. Twilight for the gray bat. Nat. Parks and Conserv. Mag. 53:12-15.
- Twente, J. W. 1955. Some aspects of habitat selection and other behavior of cavern-dwelling bats. Ecology 36:706-732.
- Twente, J. W. 1956. Ecological observations on a colony of Tadarida mexicana. J. Mammal. 37:379-390.

- Twente, J. W. 1959. Swimming behavior of bats. J. Mammal. 40:440-441.
- Twente, J. W., and J. A. Twente. 1964. An hypothesis concerning the evolution of heterothermy in bats. Ann. Acad. Sci. Fennicae 71:435-442.
- Vaughan, T. A. 1953. Unusual concentration of hoary bats. J. Mammal. 34:256.
- Webster, F. A., and D. R. Griffin. 1962. The role of the flight membranes in insect capture by bats. Animal Behav. 10:332-340.
- Wimsatt, W. A. 1944. Growth in the ovarian follicle and ovulation in Myotis lucifugus lucifugus. Am. J. Anat. 74:129-173.
- Wimsatt, W. A. 1945. Notes on breeding, pregnancy, and parturition in some vespertilionid bats of eastern United States. J. Mammal. 26:23-33.
- Wimsatt, W. A. 1960. An analysis of parturition in Chiroptera, including new observations on Myotis l. lucifugus. J. Mammal. 41:183-200.
- Wimsatt, W. A. 1970. Biology of bats, Vols. 1 and 2. Academic Press, London and New York.
- Wimsatt, W. A., P. H. Krutzsch, and L. Napolitano. 1966. Studies on sperm survival mechanisms in the female reproductive tract of hibernating bats. Am. J. Anat. 119:25-59.
- Yalden, D. W., and P. A. Morris. 1975. The lives of bats. Quadrangle/The New York Times Book Co. 247 pp.
- Zinn, T. L., and W. W. Baker. 1979. Seasonal migration of the hoary bat, Lasiurus cinereus, through Florida. J. Mammal. 60:634-635.

INDEX OF BAT SPECIES THAT OCCUR WITHIN GREAT SMOKY MOUNTAINS NATIONAL PARK
AND THE STATES OF TENNESSEE AND NORTH CAROLINA

THE BIG BROWN BAT

Eptesicus fuscus
Barbour & Davis (1969)
Beer (1955)
Beer & Richards (1956)
Christian (1956)
Clark (1978)
Cope et al. (1961)
Davis et al. (1968)
Goehring (1954)
Hall & Davis (1958)
Hamilton (1933)
Kruttsch (1950)
Kunz (1974)
Phillips (1966)

THE SILVER-HAIRED BAT

Lasiorycteris noctivagans
Barbour & Davis (1969)
Beer (1956)
Davis & Hardin (1967)
Easterlea & Watkins (1970)
Izor (1979)
Kruttsch (1966)
Reith (1980)

THE RED BAT

Lasiurus borealis
Allan (1947)
Barbour & Davis (1969)
Carter (1950)
Coleman (1950)
Constantine (1958)
Davis & Lidicker (1956)
Downes (1964)
Easterla (1967)
Glass (1966)
Hamilton & Stalling (1972)
Johnson (1932)
LaVal & LaVal (1979)
Mackiewicz & Backus (1956)
Quay & Miller (1955)

THE HOARY BAT

Lasiurus cinereus
Barbour & Davis (1969)
Beer (1954)
Bishop (1947)
Constantine (1958)
Findley & Jones (1964)
Iwen (1958)
Mackiewicz & Backus (1956)
Nero (1958)
Vaughan (1953)
Zinn & Baker (1979)

THE SEMINOLE BAT

Lasiurus seminolus
Barbour & Davis (1969)
Constantine (1958)
Hamilton (1943)
Barkalow & Adams (1955)
Barkalow & Funderberg (1960)
Coleman (1950)
Davis (1957)
Jennings (1958)
Sherman (1935)

THE SOUTHEASTERN MYOTIS BAT

Myotis austroriparius
Barbour & Davis (1969)
Bole (1943)
LaVal (1970)
Rice (1957)
Rippy (1965)
Sherman (1930)

THE GRAY BAT

Myotis grisescens
Barbour & Davis (1969)
Clark et al. (1978,1980)
Easterla (1967)
Elder & Gunier (1978)
Gunier & Elder (1971)
Hall & Wilson (1966)
Harvey (1976)
Kennedy & Best (1972)
Kruhin & Sealander (1972)
LaVal et al. (1977)
Miller (1939)
Mohr (1932)
Phillips & Hays (1978)
Rabinowitz (1978)
Rabinowitz & Tuttle (1980)
Saugey (1978)
Tuttle (1975,1976 a & b,
1979 a & b)
Tuttle & Stevenson (1977)

KEEN'S BAT

Myotis keenii
Barbour & Davis (1969)
Caire et al. (1979)
Cope & Humphrey (1972)
Goehring (1954)

THE LEAST BAT

Myotis leibii
Barbour & Davis (1969)
Baker (1967)
Davis (1955)
Gunier & Elder (1972)
Kruttsch (1966)
Neuhauser (1971)
Schwartz (1954)
Tuttle (1964)

THE LITTLE BROWN BAT

Myotis lucifugus

Barbour & Davis (1969)
 Barclay & Thomas (1979)
 Barclay et al. (1979)
 Buchler (1975, 1976, 1980)
 Cagle & Cockrum (1943)
 Clark et al. (1978b)
 Cope et al. (1961)
 Davis (1964)
 Davis et al. (1965)
 Dymond (1936)
 Fenton (1977)
 Fenton et al. (1976)
 Griffin & Hitchcock (1965)
 Humphrey (1966)
 Humphrey & Cope (1976)
 Hurst & Wiebers (1967, 1968)
 Jegla (1963)
 Keen & Hitchcock (1980)
 Krutzsch (1961)
 Kunz et al. (1977)
 Leffler et al. (1979)
 Martin & Stehn (1977)
 Martin & Fenton (1978)
 McManus (1974)
 Miller (1939)
 Procter & Studier (1970)
 Rauch & Hayward (1970)
 Reeder (1939)
 Roth (1957)
 Stones & Wiebers (1965)
 Thomas et al. (1979)
 Wimsatt (1944, 1960)

THE EASTERN PIPISTRELLE BAT

Pipistrellus subflavus

Barbour & Davis (1969)
 Cope & Humphrey (1972)
 Davis (1959a, 1964a, 1966)
 Davis & Mumford (1962)
 Findley (1954)
 Goehring (1954)
 Humphrey et al. (1977b)
 Lane (1946)
 O'Farrell & Miller (1972)
 Ploskey & Sealander (1979)
 Rabinowitz (1981)

THE INDIANA BAT

Myotis sodalis

Barbour & Davis (1969)
 Baker et al. (1966)
 Belwood (1979)
 Belwood & Fenton (1976)
 Clawson et al. (1980)
 Cope & Humphrey (1977)
 Davis & Barbour (1965)
 DeBlase et al. (1967)
 Easterla & Watkins (1969)
 Engel (1976)
 Greenhall (1973)
 Hall (1962, 1972)
 Hardin (1967)
 Hardin & Hassell (1970)
 Humphrey et al. (1977a)
 Humphrey (1975-letter, 1978)
 Humphrey & Cope (1977)
 LaVal et al. (1977)
 Mohr (1932)
 Rabinowitz (1979 a&b)
 Richter et al. (1978)
 Rippy (1965)

THE EASTERN BIG-EARED BAT

Plecotus rafinesquii

Barbour & Davis (1969)
 Dalaquest (1947)
 Hall (1963)
 Hoffmesiter & Goodpaster
 (1962)
 Pearson et al. (1952)

THE EVENING BAT

Nycticeius humeralis

Baker et al. (1968)
 Barbour & Davis (1969)
 Cope & Humphrey (1967)
 Easterla & Watkins (1970)
 Gates (1941)
 Jones (1967)

THE MEXICAN FREE-TAILED BAT

Tadarida brasiliensis

Barbour & Davis (1969)
 Lee & Marsh (1978)
 Jennings (1958)
 Krutzsch (1955)
 Ross (1961)
 Schwartz (1955)
 Sherman (1937)
 Twente (1956)

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- ACTIVITY: Harkin 1967, Hassel 1967, LaVal et al. 1977, Mumford and Whittaker 1975, Reith 1980, Stones and Wiebers 1965.
- CAVES: Barr 1961, Lawhon 1969, Tuttle 1972 - letter.
- COMMUNICATION: Barclay and Thomas 1979; Barclay et al. 1979; Fenton 1977; Fenton et al. 1976; Gould 1971, 1975; Martin and Fenton 1978; O'Farrell and Miller 1972.
- ECHOLOCATION: Buchler 1980, Griffin 1958.
- FLIGHT: Buchler 1980, Davis and Barbour 1965, Herreid and Davis 1966, Humphrey 1966, Kennedy and Best 1972, Thomas and Suthers 1972.
- FOOD AND FEEDING HABITS: Belwood 1979, Belwood and Fenton 1976; Buchler 1975, 1976, 1980; Fenton and Fullard 1981; Hamilton 1933; LaVal et al. 1977; Rabinowitz 1978; Ross 1961, 1967; Sherman 1935; Webster and Griffin 1962.
- FOSSIL REMAINS: Guilday et al. 1978, Jegla 1963, Jegla and Hall 1962.
- GRSM: Humphrey 1965 - letter; Linzey & Linzey 1968, 1971; Neuhauser 1971; Rabinowitz 1979a & b; Rabinowitz and Nottingham 1979; Tuttle 1972 - letter.
- HIBERNATION: Beer and Richards 1956, Clawson et al. 1980, Davis 1964b, Folk 1940, Goehring 1954, Hall 1964, Hardin 1967, Hardin and Hassell 1970, Humphrey 1978, Menaker 1964, Mohr 1953, Rabinowitz 1981, Rabinowitz and Nottingham 1979.
- HISTOPLASMOSIS: Hoff and Bigler 1981.
- HOMING AND MOVEMENTS: Barbour et al. 1966, Beer 1955, Carter 1950, Cope and Humphrey 1967, Cope et al. 1961, Davis 1966, Elder and Gunier 1978, Gunier and Elder 1971, Guthrie 1933, Hall and Davis 1958, Hall and Wilson 1966, Harvey 1976, Leffler et al. 1979, Tuttle and Stevenson 1977.
- MANAGEMENT: Barclay 1980; Humphrey 1978; Ladlow and Fenton 1971; LaVal and LaVal 1980; Racey 1970; Tuttle 1977, 1979a.
- PESTICIDES: Clark 1978, 1981; Clark et al. 1978a & b, 1980; Cockrum 1970; Geluso 1976; Kunz et al. 1977.
- PHYSIOLOGY: Herreid and Schmidt-Nielson 1966; Hook 1951; Hurst and Wiebers 1967, 1968; Krulin and Sealander 1972; Martin and Stehn 1977; Ploskey and Sealander 1979; Stones and Wiebers 1965, Thomas and Suthers 1972.

PREDATORS: Allan 1947, Barr and Norton 1965, Beer 1953, Downing 1961, Easterla 1967, Goodpaster and Hoffmeister 1950, Hall and Blewett 1964, Silver 1928, Sperry 1933.

RABIES: Constantine 1967, 1979a & b, Kaplan and Koprowski 1980.

REPRODUCTION: Cope and Humphrey 1972; Easterla and Watkins 1970; Glass 1966; Hamilton and Stalling 1972; Kunz 1974; Lane 1946; LaVal and LaVal 1979; Miller 1939; Nero 1958; Pearson et al. 1952; Reeder 1939; Sherman 1930, 1937; Thomas et al. 1979; Wimsatt 1944, 1945, 1960, 1966.

SEX RATIOS: Davis 1959, Elder and Gunier 1978, Tinkle and Milstead 1960.

SUMMER COLONIES: Cagle and Cockrum 1943, Christian 1956, Davis et al. 1965, Humphrey et al. 1977a & b, Krutzsch 1961, Laidlow and Fenton 1971, Rabinowitz and Tuttle 1980.

SURVIVAL AND MORTALITY: Beer 1955, Deblase et al. 1965, Geluso 1976, Herreid 1967, Keen and Hitchcock 1980, Kunz 1974, Kunz et al. 1977, Tuttle 1976b, Tuttle and Stevenson 1977.

SWARMING: Cope and Humphrey 1977, Davis 1964b.

THERMOREGULATION: Davis and Reite 1967; Henshaw and Folk 1966; Herreid and Schmidt-Nielson 1966; Hock 1951; Hurst and Wiebers 1967, 1968; McManus 1974; Rabinowitz 1981; Stones and Wiebers 1965; Twente and Twente 1964.



As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environment and cultural value of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.